

Shell rather solid, subopaque, smooth, strongly concentrically wrinkled, longitudinally obsolete striated; posterior side acuminate, subtruncated; dorsal margin posteriorly sloping; spoon-shaped process thick and wide; ventral margin strongly arcuated.

Hab. Ceylon, on the sands. (Mus. Cuming.)

ANATINELLA DILATATA, Adams. *A. testâ tenui, fragili, concentricè corrugatâ, longitudinaliter striatâ, latere postico dilatato, obliquè valdè truncato, margine dorsali posticè horizontali recto, processu cochleariformi parvo tenui, dentibus cardinalibus valdè divergentibus; margine ventrali arcuato.*

Hab. — ?

Shell thin, fragile, concentrically wrinkled, longitudinally striated; posterior side dilated, obliquely strongly truncated; dorsal margin posteriorly horizontal and straight; spoonshaped process small, thin; cardinal teeth greatly diverging, ventral margin arcuated.

Hab. Puteao, Philippines, on sand-banks, at low water; *H. C.* (Mus. Cuming.)

ANATINELLA VENTRICOSA, Adams. *A. testâ tenui, ventricosâ, semipellucidâ, concentricè corrugatâ, longitudinaliter conspicuè striatâ, striis elevatiusculis, latere postico rotundato; margine dorsali posticè declivi; processu cochleariformi tenui, angusto; margine ventrali leviter arcuato.*

Hab. — ?

Shell thin, ventricose, semipellucid, concentrically wrinkled, longitudinally conspicuously striated, striæ rather elevated, posterior side rounded, dorsal margin posteriorly sloping; spoonshaped process thin, narrow, ventral margin slightly arcuated.

Hab. Puteao, Philippines, on sand-banks, at low water; *H. C.* (Mus. Cuming.)

February 26, 1850.

W. Spence, Esq., F.R.S., in the Chair.

The following paper was read:—

1. MONOGRAPHS OF CYCLOSTREMA, MARRYAT, AND SEPARATISTA, GRAY; TWO GENERA OF GASTEROPODOUS MOLLUSKS. BY ARTHUR ADAMS, R.N., F.L.S. ETC.

CYCLOSTREMA, Marryat.

Animal ignotum. Operculum — ? *Testa depressa, perspective-umbilicata; apertura circularis.*

Shell depressed; aperture circular; umbilicus very large, with the volutions of the whorls visible within it.

CYCLOSTREMA CANCELLATA, Marryat. *C. testâ albâ, lineis longitudinalibus et transversis elevatis decussantibus inde cancel-*

latá; aperturá labiis cancellatis; cancellis transversim striatis.

Hab. in insulis Philippinis.

Shell white, cancellated, with elevated, decussating transverse and longitudinal lines; aperture with the lips cancellated; cancelli transversely striated.

Hab. Baszay, island of Samar, 6 fathoms, coral sand; *H. C.* (Mus. Cuming.)

Cyclostrema cancellata, *Marryat*, *Trans. Linn. Soc.* 1818, vol. xii. p. 338.

✓ *CYCLOSTREMA NIVEA*, Chemnitz. *C. testá orbiculari, niveá, pellicudá; spirá depressá, anfractibus transversim costellatis, costellis regularibus, superis distantioribus; interstitiis leviter concavis; suturis profundis subcanaliculatis; labro simplici; umbilico peramplo.*

Hab. in maribus Occidentalibus.

Shell orbicular, snowy white, transparent; spire depressed, whorls transversely ribbed, ribs regular, the upper fewer and wider apart; interstices slightly concave; sutures deep, slightly channeled; lip simple; umbilicus very large.

Hab. Seas of India. (Mus. Cuming.)

Turbo niveus, *Chemnitz*, *Conch. Cab.* vol. x. pl. 165. f. 1587 and 1588. *Delphinula nivea*, *Reeve*. *Delphinula lævis*, *Kiener*.

✓ *CYCLOSTREMA REEVIANA*, Hinds. *C. testá orbiculari, subdiscoideá, muticá; spirá depressiusculá, anfractibus convexis, longitudinaliter carinulatis, carinulis numerosis, superis distantioribus; interstitiis liris obliquis corrugato-clathratis; labro simplici; umbilico peramplo.*

Hab. — ?

Shell orbicular, somewhat discoid; spire rather depressed, longitudinally keeled, keels numerous, upper ones wider apart; interstices latticed in a wrinkled manner, with oblique ridges; inner lip simple; umbilicus very large.

Hab. Straits of Malacca, 17 fathoms. (Mus. Cuming.)

Delphinula Reeviana, *Hinds*, *Proc. Zool. Soc.* 1843.

✓ *CYCLOSTREMA COBIJENSIS*, *Reeve*. *C. testá turbinatá, minutá, anfractibus convexis, carinulis transversis et longitudinalibus æquidistantibus regulariter clathratis; umbilico mediocri; labro simplici.*

Hab. Cobija, Peru.

Shell turbinated, very small; whorls convex, regularly latticed, with equidistant, transverse and longitudinal ribs; umbilicus moderate; lips simple.

Hab. Port of Cobija, Peru, under stones in rocky places, low water; *H. C.* (Mus. Cuming.)

Delphinula Cobijensis, *Reeve*, *Proc. Zool. Soc.* 1843.

137 ✓ *CYCLOSTREMA SPIRULA*, *Adams*. *C. testá orbiculari, discoideá, evolutá; spirá depresso-concavá, anfractibus rotundatis, primis*

contiguus, ultimá distinctá, transversim costulatis, costellis subconfertis, æquidistantibus; interstitiis tenuissimè longitudinaliter striatá; aperturá circulari; peritremate continuo.

Hab. in insulis Philippinis. (Mollusca, Pl. VIII. fig. 22.)

Shell orbicular, discoid, evolute; spire depressly concave; whorls rounded, the first contiguous, the last separate, transversely ribbed, ribs equidistant, close together; interstices very finely longitudinally striated; aperture circular; peritreme continuous.

Hab. Philippine Islands. (Mus. Cuming.)

CYCLOSTREMA CINGULIFERA, Adams. *C. testá orbiculari, nitidá; spirá depressá, anfractibus rotundatis, carinulis transversis, acutis, æquidistantibus; interstitiis (sub lente) tenuissimè longitudinaliter striatis; aperturá subcirculari, supra subangulatá; umbilico mediocri.* ✓

Hab. in insulis Philippinis.

Shell orbicular, shining; spire depressed; whorls rounded, with equidistant, small, acute, transverse keels; interstices (under the lens) very finely longitudinally striated; aperture subcircular, angulated above; umbilicus moderate.

Hab. Dumaguete, island of Zebu, 4 fathoms; *H. C.* (Mus. Cuming.)

CYCLOSTREMA NITIDA, Adams. *C. testá orbiculari, lævi, tenui, nitidá; spirá elevatiusculá, anfractibus prope suturam subangulatis; suturis profundis, subcanaliculatis; aperturá subcirculari, supra angulatá; umbilico magno, peromphalo angulato, acuto.* ✓

Hab. in insulis Philippinis.

Shell orbicular, smooth, shining; spire rather elevated; whorls somewhat angulated near the suture; suture deep, subcanaliculated; aperture subcircular, angulated above; umbilicus large, peromphalus acutely angulated.

Hab. Catanuan and Sual, island of Luzon, 10 fathoms, sandy mud; *H. C.* (Mus. Cuming.)

CYCLOSTREMA PLANORBULA, Adams. *C. testá orbiculari, planorbulá; spirá depressá, anfractibus lævibus, rotundatis, suturis distinctis; aperturá subcirculari, supra angulatá; umbilico permagno, patulo.* ✓

Hab. in insulis Philippinis.

Shell orbicular, planorbular; spire depressed, whorls smooth, rounded, suture distinct; aperture subcircular, angulated above; umbilicus very large and open.

Hab. Sual, island of Luzon, 10 fathoms, sandy mud; *H. C.* (Mus. Cuming.)

CYCLOSTREMA PLANA, Adams. *C. testá orbiculari, dorso planoconvexá; spirá depressá, anfractibus planis, supra transversim striatis, infra lævibus; aperturá subcirculari, supra angulatá; umbilico peramplo, anfractibus intus conspicuis.* ✓

Hab. in insulis Philippinis.

Shell orbicular, back plano-convex; spire depressed, whorls flat-

tened, above transversely striated, below smooth; aperture subcircular, angulated above; umbilicus very wide, the whorls visible within it.

Hab. Dumaguete, island of Negros; *H. C.* (Mus. Cuming.)

CYCLOSTREMA MICANS, Adams. *C. testá turbinatá, minútá, albá, nitidá, anfractibus convexis, longitudinaliter obliquè costellatis, transversim carinulatis, carinulis nodulosis; umbilico mediocri; aperturá circulari; peristomate continuo, incrassato.*

Hab. Australia.

Shell turbinated, small, white, shining, whorls convex, longitudinally obliquely ribbed, transversely carinated, keels nodulous; umbilicus moderate; aperture circular; peristome continuous, thickened.

Hab. Port Lincoln; *Metcalf.* (Mus. Cuming & Metcalf.)

CYCLOSTREMA ELEGANS, Adams. *C. testá orbiculari, discoïdè, tenui, semipellucidá; spirá depressá, anfractibus rotundatis, transversim omnino striatis; suturis distinctis; aperturá subcirculari, supra angulatá; umbilico peramplo.*

Hab. in insulis Philippinis.

Shell orbicular, discoid, thin, semipellucid; spire depressed, whorls rounded, entirely transversely striated; suture distinct; aperture subcircular, angulated above; umbilicus very wide and open.

Hab. Sibonga, island of Zebu, 10 fathoms, sandy mud; *H. C.* (Mus. Cuming.)

CYCLOSTREMA SULCATA, Adams. *C. testá orbiculari, discoïdè; spirá planiusculá, anfractibus convexis, costellis transversis confertis regularibus, interstitiis profundè sulcosis; suturis profundis canaliculatis; umbilico patulo; peromphalo lævi.*

Hab. in insulis Philippinis.

Shell orbicular, discoid; spire rather flattened, whorls convex, with regular, transverse, small ribs, numerous and close together, interstices deeply grooved; suture caudiculated; umbilicus open; umbilical area smooth.

Hab. Tambay, island of Negros, coarse sand, 6 fathoms; *H. C.* (Mus. Cuming.)

CYCLOSTREMA ANGULATA, Adams. *C. testá orbiculari, discoïdè; spirá depressá, anfractibus transversim costellatis, costellis regularibus, æquidistantibus, interstitiis tenuissimè striatis; anfractu ultimo biangulato, supra costellato, in mediá plano, infra costellato; aperturá subangulatá; peritremate interrupto; umbilico permagno.*

Hab. in insulis Philippinis.

Shell orbicular, discoid; spire depressed, whorls transversely costellated; ribs small, equal, equidistant, interstices very finely striated; last whorl biangulated, costellated above, smooth in the middle, and ribbed beneath; aperture somewhat angulated; peritreme not continuous; umbilicus very large.

Hab. Sibonga, island of Zebu, 10 fathoms, sandy mud; *H. C.* (Mus. Cuming.)

SEPARATISTA, Gray.

Animal ignotum. Operculum — ? *Testa orbicularis, subdiscoidea, anfractibus primis contiguis, ultimo distincto; apertura patulâ, effusâ, angulis subcanaliculatis; umbilicus magnus, infundibuliformis, usque ad apicem.*

Shell orbicular, somewhat discoid, the first whorls contiguous, the last disunited; aperture wide-spreading, angulated; umbilicus large, infundibuliform, the whorls visible within as far as the apex.

The *Cornu* of Schumacher and the *Lippistes* of Montfort, founded upon the *Argonauta cornu* of Fichtel, appear to belong to *Carinaria* of Lamarck. *Steira* of Eschscholtz would seem by the figure given in Oken's 'Isis' to be an *Atlanta* badly drawn in an inverted position, and indeed is founded upon the "Corne d'Ammon vivant" of Lesueur, *Atlanta Peronii*.

Separatista, Gray (not described).

✓ *SEPARATISTA GRAYII*, Adams. *S. testâ spirâ depressâ, anfractibus carinulis quinque transversis; apertura oblongo-transversâ; labio reflexo, anticè rotundato.* = *Cornu*

Hab. apud Promontorium Bonæ Spei.

Shell with the spire depressed, whorls with five transverse keels; aperture transversely oblong; inner lip reflexed, anteriorly rounded.

Hab. Cape of Good Hope. (Mus. Cuming.)

✓ *SEPARATISTA CHEMNITZII*, Adams. *S. testâ spirâ elevatâ, anfractibus carinulis tribus transversis; apertura subcirculârî; labio subreflexo, anticè producto, angulato.* = *Separatista*

Hab. in insulis Philippinis.

Shell with the spire elevated, whorls with three transverse keels; aperture subcircular; inner lip somewhat reflexed, anteriorly produced and angulated.

Hab. Island of Bureas, Philippines; *H. C.* (Mus. Cuming.)
Turbo *separatista, Chemnitz.*

PROFESSOR OWEN communicated a Memoir *, in continuation of his previous papers published in the Transactions (vol. iii. pp. 243, 307, 345), on the Gigantic Wingless Birds of New Zealand.

Having in the previous Memoirs determined and referred to their genera and species the different bones of the leg, he made those of the foot the subject of the present communication, which was illustrated by the exhibition of an extensive series of remains from both the North and South (or Middle) islands of New Zealand; comprising the entire series of phalanges of one and the same foot of the *Palapteryx robustus*, a gigantic species from Waikawaite; a similarly complete series of the *Dinornis rheides*; and series more or less incomplete of the phalanges of the *Dinornis giganteus*, *Palapteryx ingens*, and other genera and species of the singular extinct wingless birds of New Zealand. The characteristics of the different phalanges

* This paper will be printed in the Transactions, vol. iv. Part 1.

were minutely detailed, and the different proportions of the toes characteristic of different species, especially of the two most gigantic, viz. the *Dinornis giganteus* of the North island, and the *Palapteryx robustus* of the turbary deposits of the Middle island. The adaptation of the claw-bones for scratching up the soil was obvious from their shape and strength. The generic distinction of *Palapteryx* had previously been indicated by a slight depression on the metatarsus, supposed by the author to be for the articulation of a small back-toe, as in the *Apteryx*; and he had since received a specimen of the principal bone of that toe, which was exhibited and described. A nearly entire sternum, a portion of a minute humerus, and a cranium of one of the smaller species of *Dinornis*, were also exhibited and described.

This magnificent series of remains of great New Zealand birds had been collected chiefly by the late Colonel Wakefield, and had been transmitted to the author through the kind interest of J. R. Gowen, Esq., a Director of the New Zealand Company.

March 12, 1850.

W. Spence, Esq., F.R.S., in the Chair.

The following papers were read:—

1. FIRST THOUGHTS ON A PHYSIOLOGICAL ARRANGEMENT OF BIRDS. BY EDWARD NEWMAN, F.L.S., F.Z.S. ETC.

The systematic arrangement of the Class Aves is more unsettled than that of any other portion of the animal kingdom, a circumstance that may fairly be attributed to our attaching too high a value to characters purely structural or admensural, while we neglect others more intimately connected with reproduction; in a word, to the substitution of physical for physiological characters. In mammals, reptiles and fishes, we have a primary division based entirely on physiology: thus mammals are placental or marsupial; reptiles are oviparous or spawning; fishes are viviparous or spawning; and this primary division of these classes is admitted by all physiologists to be strictly natural. Notwithstanding, however, the purely physiological character, on which these primary divisions depend, it is found that physical characters harmonise with physiological, and that intimate structure in each instance bears out physiological difference. It were not wise altogether to discard structural differences even in the outset of an inquiry into system, but it is necessary to use them rather as corroborative than as indicative; and above all to draw a distinct and permanent line between such as are truly intimate and such as are purely adaptive. It has always appeared to me that one of the chief advantages of an extensive Vivarium like that possessed by our Society is the opportunity it affords for studying animated nature in an ani-